MYCOTAXON

Vol. VII, No. 2, pp. 373-376 July-September 1978

A NEW BLUING SPECIES OF PSILOCYBE FROM FLORIDA, U.S.A.

by

Gastón Guzmán
Escuela Nacional Ciencias Biológicas, I.P.N.
Apartado Postal 26-378
México 16, D.F., México

and

Steven H. Pollock
Herbal Medicine Research Foundation
P.O. Box 29187
San Antonio, Texas 78229, U.S.A.

During the II International Mycological Congress at Tampa, Florida, U.S.A., in September 1977, one of the authors (Pollock) collected near Tampa an undescribed bluing species of Psilocybe. This interesting novelty is described below. This is the third record of bluing species of Psilocybe in Florida. The first was made by Murrill (1941) who described Stropharia cyanescens Murr., a synonym of Psilocybe cubensis (Earle) Sing. (Singer, 1948) and a very common hallucinogenic fungus throughout Florida. The second record of a bluing species of Psilocybe from Florida was made by Guzmán and Thiers (1977) who reported P. mammillata (Murr.) Smith, previously known only from Jamaica.

This paper precedes a monograph on the genus Psilocybe in preparation by the senior author. He expresses his thanks to the Guggenheim Memorial Foundation at New York for supporting his research. He also expresses his thanks to the directors of the herbaria NY and PC for loan of types. Pollock gratefully acknowledges Dr. R.L. Taylor at the University of Texas Health Science Center at San Antonio for providing laboratory facilities to conduct part of his research. The authors further thank Dr. D.E. Stuntz and Dr. G.A. Escobar, both at the University of Washington in Seattle, for critical review of this paper.

Psilocybe tampanensis Guzmán & Pollock, sp. nov. Fig. 1

Pileo circa 24 mm lato, convexo vel subumbilicato, leve, hygrophano, subviscido, ochraceo-brunneo. Lamellis subadnatis, brunneo-violaceis, marginibus albidis. Stipite circa 50 x 2 mm, rufobrunneo, leve, basi caerulescente;

sine annulo. Carne caerulescente, odore et sapore farinaceis. Sporis (7.7-) 8.8-9.9 (-12) x (6-) 7-8.8 (-9.9) x 5.5-6.6 µm, frontaliter subrhomboideis, lateraliter subellipsoideis. Pleurocystidiis nullis. Cheilocystidiis 16-22 x 4-9 µm, copiosis, lageniformibus, hyalinis, collo longis et flexuosis, 2.2-3 µm latis. Subhymenio hyalino, pigmento flavo-brunneo intercelluloso irregulariter deposito. Epicute subgelatinosa. Terricola. Typus: Pollock, Sept. 3, 1977, prope Brandon, Tampa, Florida, U.S.A. (ENCB).

Fig. 1. Psilocybe tampanensis Guzmán & Pollock (type), wild carpophore (photo by Pollock).

Pileus about 24 mm broad, convex to slightly umbilicate, smooth, subviscid, hygrophanous, ochraceous brown to straw brown, slightly bluish at the margin. Lamellae subadnate, dark violet brown with whitish edges. Stipe about 50 x 2 mm, fibrous, slightly thickened at the base, smooth but subflocculose at the apex, yellowish brown to reddish brown, with whitish to cesious base. Flesh whitish to yellowish, thin, staining blue when cut. Odor and taste slightly farinaceous. Spore print violaceous purpuraceous brown.

Spores (7.7-) 8.8-9.9 (-12) x (6-) 7-8.8 (-9.9) x 5.5-6.6 µm, subrhombic in face view, subelliptic in side view, brownish yellow (in KOH), with thick smooth wall, a distinct

germ pore, and a short appendage. Basidia 14-22 x 8-10 µm, tetrasporic, hyaline, vesiculose or subclaviform. Pleurocystidia absent. Cheilocystidia 16-22 x 4-9 µm, lageniform, with a more or less flexuous long neck 2.2-3 µm in diameter, sometimes irregularly branched, hyaline, abundant, forming a sterile band at the edge of the gill. Subhymenium hyaline, but with yellow brown (in KOH) pigment irregularly incrusted on the walls. Trama regular, light brown to dark yellowish brown, with diffuse pigment; hyphae 10 µm in diameter. Epicutis subgelatinized, consisting of parallel, thin (about 2 µm wide), hyaline hyphae. Hypodermium formed by pigmented to hyaline, elongated to subglobose hyphae. Clamp connections present.

Habitat and distribution. Solitary on sandy soil in a meadow. Known only from the type locality.

Material examined. U.S.A., Florida, near Tampa, SE of Brandon, Sept. 3, 1977, Pollock (Type, ENCB).

Cultural observations. Mycelia were obtained from a spore print of the type on 1% malt extract agar and then brought to fruition in San Antonio by casing spawn grown on ryegrass seeds and crimped oats. Procedures for spawn production on these seed media and subsequent methodology leading to fructification were essentially identical to those employed by Pollock (1977). Casing mycelia grown on composted cattle manure also resulted in formation of fruit bodies. Fruit bodies obtained in culture using a fluorescent light source (Pollock 101 and 102, Dec. 1977, ENCB) did not attain full size during their development and usually failed to sporulate. Pileus small (less than 10 mm in diameter); stipe thin (1-2 mm in width), usually very short (less than 35 mm in length) or sometimes elongated (up to 113 mm in length). P. tampanensis is strongly heliotropic. Fruit bodies obtained in a fiberglass greenhouse (Pollock 110, March 1977, ENCB) were robust and sporulated copiously. Pileus sometimes reached 38 mm in diameter; stipe thick (often 4-5 mm wide) and reached up to 60 mm in length. Carpophores tend to grow in large clusters on the casing soil. Both browing and bluing are observed. The former tends to predominate unless the latter is accelerated by handling or tissue damage. These same oxidative phenomena occur in sclerotia produced by mycelia in cultivation.

Production of sclerotia in cultivation was observed for P. mexicana (Heim & Cailleux, 1957, and Heim et al., 1958). Guzmán (1978) reported sclerotia in wild conditions in P. caerulescens and Pollock (1978) has observed their socio-economic importance to the Mazatecs of Oaxaca. It is interesting to note that for Psilocybe sclerotia have been reported in P. mexicana, P. caerulescens, and P. tampanensis.

Discussion. P. tampanensis is close to P. mexicana Heim and P. caerulescens Murr. but differs from the former in the shape of the fruiting body and size of the basidia and from the latter in the size of spores and cheilocystidia. In fact, P. mexicana has a mycenoid habit and basidia 22-24 (-32) x 7.7-11 µm; where as P. caerulescens has a collybioid habit, spores (6-) 6.7-8 (-8.5) x 5.2-6.5 x 3.3-5.2 µm, and cheilocystidia 15-22 x (3-) 4.4-5.5 µm, according to examination made by the senior author of both types (PC and NY respectively). P. tampanensis seems to be a subtropical species intermediate between P. caerulescens and P. mexicana. P. caerulescens occurs from Alabama (U.S.A.) to Venezuela (a new rocord recently made by the senior author), and P. mexicana has a distribution from Mexico to Guatemala (recently reported from the latter country by Lowy, 1977). Both fungi are hallucinogenic and are found in meadows or open places of the subtropical forests. Because of its close relationships with the previously mentioned hallucinogenic species, P. tampanensis is very probably to contains psilocin and psilocybin. A bioassay by Pollock has established that this fungus is psychoactive in man.

Literature cited

Guzmán, G., 1978. Further investigations of the Mexican hallucinogenic mushrooms with descriptions of new taxa and critical observations on additional taxa. Nova Hedwigia (in press).

Guzmán, G. and H.D. Thiers, 1978. Psilocybe mammillata in Florida. Mycotaxon 6: 477-480.

Heim, R. and R. Cailleux, 1957. Culture pure et obtention semi-industrielle des Agarics hallucinogènes du Mexique. Comptes Rendus Ac. Sc. 244: 3109-3114.

Heim, R., A. Brack, H. Kobel, A. Hofmann and R. Cailleux, 1958. Déterminisme de la formation des carpophores et des sclérotes dans la culture du Psilocybe mexicana Heim, Agaric hallucinogènes du Mexique, et mise en evidence de la psilocybine et de la psilocine. Idem 246: 1346-1351.

Lowy, B., 1977. Hallucinogenic mushrooms in Guatemala. Jour. Psychedelic Drugs 9: 123-125.

Murrill, W.A., 1941. Some Florida novelties. Mycologia 33: 279-287.

Pollock, S.H., 1977. Magic mushroom cultivation. Herbal Medicine Research Foundation, San Antonio.

Pollock, S.H., 1978. Camotillos. Psychomycophile 1 (in press).

Singer, R., 1948. Diagnose Fungorum novorum Agaricalium. Beih. Sydowia 2: 26-42.